# Standard Detail Drawings

**Table of Contents** 

August 16, 2022

## 8. DRAINAGE

#### 8A. CATCH BASINS AND COVERS

Inlet and Manhole Covers
 sheet a: Inlet Covers Type A, H, A-S, H-S and Z
 sheet b: Inlet Covers Type B, B-A, C, MS, MS-A, and WM
 sheet c: Inlet Covers Type F, HM, HM-S, S, T, V, HM-GJ, and HM-GJ-S
 sheet d: Inlet Covers Type BW; Manhole Covers Type J, J-S, K, L and M

 V.2 8A8 Catch Basins 3-FT, 4-FT, 5-FT and 6-FT Diameter

#### 8B. MANHOLES

8A9

v.2

- v.3 <u>8B9</u> Manholes 3-FT, 4-FT, 5-FT, 6-FT, 7-FT, 8-FT, 9-FT and 10-FT Diameter
- v.2 8B10 Manholes 3x3-FT, 4x4-FT, 5x5-FT, and 6x6-FT

Catch Basins 2x3-FT and 2.5x3-FT

v.2 8B11 Manholes Variable Tee and Special 4-FT Diameter

#### 8C. INLETS

- v.2 8C6 Inlets 3-FT and 4-FT Diameter
- v.2 8C7 Inlets 2x2-FT, 2x2.5-FT, 2x3-FT, and 2.5x3-FT
- v.2 8C8 Inlets Median 1 and 2 Grate
- v.2 8C9 Inlets Median 3 and 4 Grate

#### 8D. CURB AND GUTTER, AND SURFACE DRAINS

- v.22 <u>8D1</u> Concrete Curb and Gutter
  - sheet a: Concrete Curb and Gutter
  - sheet b: Concrete Curb Ties and Curb and Gutter Applications
- v.7 8D2 Concrete Surface Drains Flume Type at Structures
  - <u>a b c</u>
- v.8 8D3 Concrete Surface Drains Drop Inlet Type at Structures
  - <u>a</u> <u>b</u>
- v.6 <u>8D4</u> Concrete Surface Drains and Asphaltic Flumes
- v.20 8D5 Curb Ramps
  - sheet a: Curb Ramps Types 1 and 1-A
  - sheet b: Curb Ramps Types 2 and 3
  - sheet c: Curb Ramps Type 4A and 4A1
  - sheet d: Curb Ramps Type 4B and 4B1
  - sheet e: Curb Ramps Type 5, 6, 7A, 7B & 8
  - sheet f: Curb Ramps Radial Detectable Warning Field Applications
  - sheet g: Curb Ramps Rectangular and Radial Detectable Warning Plates
- v.2 8D13 Slotted Corrugated Metal Pipe Surface Drains
- v.2 8D14 Slotted Vane Drain

/.5	8D15	Edgedrains
		sheet a: Edgedrain Outlet and Outfall Markers
		sheet b: Edgedrain and Base Aggregate Open Graded
		sheet c: Edgedrain and Base Aggregate Open Graded
/.11	<u>8D16</u>	Concrete Gutter, Curb and Gutter and Pavement Ties
/.6	<u>8D17</u>	Manholes, Manhole and Inlet Covers
/.3	<u>8D18</u>	Driveway and Sidewalk Ramps Types X and Y
/.3	<u>8D19</u>	Driveway and Sidewalk Ramps Type Z
/.1	<u>8D20</u>	Driveways with Curb & Gutter Returns
/.1	<u>8D21</u>	Driveways without Curb & Gutter
/.1	<u>8D22</u>	Driveways without Curb & Gutter Resurfacing Projects Rural
	8E. EI	ROSION CONTROL DEVICES
<i>/</i> .2	<u>8E5</u>	Sodded Backslope Flume and Intercepting Embankment
<i>'</i> .3	<u>8E8</u>	Typical Installations of Erosion Bales/Temporary Ditch Checks
/.6	<u>8E9</u>	Silt Fence
/.2	<u>8E10</u>	Inlet Protection Type A, B, C and D
/.2	<u>8E11</u>	Turbidity Barrier
/.1	<u>8E12</u>	Silt Screen
/.1	<u>8E14</u>	Tracking Pad
/.1	<u>8E15</u>	Culvert Pipe Checks
	8F. PI	PE AND CULVERT
/.11	<u>8F1</u>	Apron Endwalls for Culvert Pipe
<i>/</i> .1	<u>8F2</u>	Apron Endwalls for Pipe Arch and Elliptical Pipe
/.3	<u>8F3</u>	Details for Pipe Cattle Pass, Concrete Endwalls and Steps
/.8	<u>8F4</u>	Joint Ties for Concrete Pipe and Concrete Collar Detail
1.4	<u>8F6</u>	Reinforced Concrete Apron Endwall for Pipe Underdrain
/.5	<u>8F7</u>	Steel Apron Endwalls for Culvert Pipe and Pipe Arch Sloped Side Drains
/.2	<u>8F8</u>	Steel Apron Endwalls for Culvert Pipe and Pipe Arch Sloped Cross Drains
/.2	<u>8F10</u>	Concrete Masonry Endwalls for Culvert Pipe and Pipe Arch
		9. INTERSECTION DESIGN
	9A. GI	EOMETRIC LAYOUTS
/.13	<u>9A1</u>	At-Grade Side Road Intersections
		<u>sheet a</u> : At-Grade Side Road Intersection, Types B1, B2, C and D and Tee Intersection Bypass Lane
		sheet b: At-Grade Side Road Intersection, Types A1 and A2
	9B. C	ONDUIT
1.10	<u>9B2</u>	Conduit
/.12	<u>9B4</u>	Pull Box

9B16 Pull Box Non-Conductive

#### 9C. BASES 9C2 Concrete Bases Types 1, 2, 5 and 6 v.9 9C3 Transformer/Pedestal Bases v.4 9C4 Concrete Base Bolt Repair v.4 9C5 Concrete Control Cabinet Bases v.10 9C6 Concrete Control Cabinet Base, Type 9, Special v.7 9C8 Concrete Base, Type 7 v.6 Concrete Base, Type 8 9C9 v.6 9C10 Transformer Base for 15-Inch Bolt Circle v.3 9C11 Concrete Base Type 10 v.10 9C12 Concrete Base Type 13 v.9 <u>a</u> <u>b</u> 9C13 Concrete Base Type 10 and Type 13 Extension v.2 9C14 Concrete Control Cabinet Base, Type L v.3 v. 1 9C15 Concrete Base Type 10 Special 9D. CONTROL CABINETS 9D1 Cabinet Service Installation (Meter Breaker Pedestal) v.5 9D2 Signal Control Cabinet v.3 9D3 Post Mounted Controller Service Installation v.3 9D4 Lighting Control Cabinet 120/240 Volt V.3v.2 9D5 L30 Lighting Control Cabinet 240/480 Volt 9E. POLE MOUNTINGS FOR TRAFFIC SIGNALS & LIGHTING UNITS 9E1 Pole Mountings v.15 sheet a: Pole Mountings for Traffic Signals Type 2 sheet b: Pole Mountings for Traffic Signals and Lighting Units Type 3 (Heavy Duty) sheet c: Pole Mountings for Traffic Signals and Lighting Units Type 4 sheet d: Pole Mountings for Lighting Units Type 5 (30 feet) sheet e: Pole Mountings for Lighting Units Type 6 (35 feet) sheet f: Pole Mountings for Lighting Unit, Type 17 (40 feet) sheet g: Hardware Details for Pole Mountings Freeway Lighting Unit Pole Wiring 9E2 v.5 9E3 Non-Freeway Lighting Unit Pole Wiring v.6 v.6 9E4 Walkway Lighting Unit and Concrete Base, Type 11 9E5 Traffic Signal Standard Ornamental Bracket Mountings (Typical) for 13 ft. or 15 ft. v.6 9E6 Traffic Signal Standard Poly Bracket Mountings (Typical) 13 ft. or 15 ft. v.5 9E7 Traffic Signal Standard Pedestrian and Flasher Typical Mounting Details v.6 9E8 Type 9, Type 10, Type 9/10 Special, Type 12 and Type 13 Poles with Monotube Arms v.9 sheet a: Type 9 Pole 15'-30' Monotube Arm sheet b: Type 9 Special Pole 35' Monotube Arm sheet c: Type 9 Special Pole 40' Monotube Arm sheet d: Type 9 Special Pole 45' Monotube Arm sheet e: Type 10 Pole 15'-30' Monotube Arm sheet f: Type 10 Special Pole 35' Monotube Arm

sheet g: Type 10 Special Pole 40' Monotube Arm

```
sheet h: Type 10 Special Pole 45' Monotube Arm
                  sheet i:
                           Type 12 Pole 35'-55' Monotube Arm
                  sheet i:
                           Type 13 Pole 35'-55' Monotube Arm
                  sheet k: General Notes and Hardware Details for Type 9, Type 10, Type 9/10 Special, Type 12
                           and Type 13 Poles with Monotube Arms
             Over Height Poles and Monotube Arms
     9E12
v.1
                  sheet a: Over Height Type 9 Pole 15 - 30' Monotube Arm
                  sheet b: Over Height Type 10 Pole 15' - 30' Monotube Arm
                  sheet c: Over Height Type 12 Pole 35' - 55' Monotube Arm
                  sheet d: Over Height Type 13 Pole 35' - 55' Monotube Arm
                           General Notes and Hardware Details for Over Height Type 9, 10, 12 and 13 Poles with
                           Monotube Arms
     9F. LOOP DETECTORS
     9F1
             Details for the Installation of Temporary Traffic Signal Loop Detector Wires in any Existing Pavement
v.4
     9F4
             Loop Detector Installed in New Concrete Pavement Round CSCP Pullbox
v.5
     9F7
             Loop Detector Installed in New Concrete Base with new Asphaltic Overlay Round CSCP Pullbox
v.5
     9F8
             Loop Detector Placed in Crushed Aggregate Base (New Asphaltic Pavement)
v.4
             Loop Detector Placed in Crushed Aggregate Base (New Concrete Pavement)
     9F9
v.5
     9F10
             Loop Detector Installed in Existing or New Asphaltic Pavement with New Asphaltic Overlay
v.4
     9F11
             Loop Detector Installed in Existing Concrete Pavement with New Asphaltic Overlay
v.4
     9F12
             Loop Detector Installed in Existing Concrete Pavement
v.4
     9F13
             Loop Detector Installed in Existing Asphaltic Pavement
v.4
     9F14
             Loop Detector Installed in New Concrete Pavement Round CSCP Pull Box 45 Degree Elbows to Pull
V.3
             Box
     9F15
             Loop Detector Installed in Base Course with Pull (Splice) Box Off Roadway (Options)
v.4
                  sheet a: Loop Detector Installed in Base Course with Pull (Splice) Box Off Roadway (Option 1)
                  sheet b: Loop Detector Installed in Base Course with Pull (Splice) Box Off Roadway (Option 2)
     9F16
             Two Loop Detectors Installed in New Concrete Pavement Round CSCP Pull Box 45 Degree Elbows to
v.2
             Pull Box
     9G. TEMPORARY TRAFFIC SIGNALS
     9G1
             Span Wire Temporary Traffic Signal
v.4
                  <u>a b c d e f g</u>
     9G2
             Bridge Temporary Traffic Signal Installation
v.5
                  <u>a</u> <u>b</u> <u>c</u>
     9H. INTELLIGENT TRANSPORTATION SYSTEMS (ITS)
     9H1
             Base ITS Controller Cabinet
v.1
     9H3
             2 Circuit Meter Breaker Pedestal
V.1
     9H4
             2 Circuit Electrical Service Meter Breaker Pedestal and Breaker Disconnect Box
V.1
     9H5
             Cabinet Breaker Disconnect Box Installation
v.1
     9H6
             Signal Assembly Advance Flasher Type 1
v.2
     9H7
             Signal Assembly Ramp Control Side mount
v.1
             Communications Manhole Detail
     9H8
v.3
     <u>9H9</u>
             Communication Vault Type 1
v.2
     9H10
             Communication Vault Type Round
v.1
```

- v.1 9H11 Identification Plaque Requirements and Placement
   v.1 9H14 Wireless Detection Sensor Mounting
- v.1 9H15 Microwave Detector Assembly and Mounted Controller Installation
- v.1 9H16 Wireless Antenna Installation

## 10. FREEWAY LIGHTING DESIGN

#### 10A. GENERAL

- v.4 10A1 Electrical Handhole Wiring
- v.3 10A2 Identification Plaques Light Poles
- v.3 10A3 Circuit Identification Plaques Sign Bridges
- v.3 10A4 Identification Plagues Underdeck and High Mast Lighting
- v.3 10A5 Electrical Details Ground Mount Light Poles Isolated Neutral Systems
- v.3 10A6 Electrical Details Ground Mount Light Poles Grounded Neutral Systems
- v.3 10A7 Electrical Details Ground Mount Light Poles Phase-to-Phase Systems
- v.3 10A8 Electrical Details Structure Mount Light Poles Isolated Neutral Systems
- v.3 10A9 Electrical Details Structure Mount Light Poles Grounded Neutral Systems
- v.3 10A10 Electrical Details Structure Mount Light Poles Phase-to-Phase Systems
  - 10A11 Electrical Details Median Mount Light Poles Isolated Neutral Systems
- v.3 10A12 Electrical Details Median Mount Light Poles Grounded Neutral Systems
- v.3 10A14 Electrical Details High Mast Lighting

<u>a</u> <u>b</u>

v.4 10A15 Electrical Details Underdeck Lighting

<u>a</u> <u>b</u>

v.5 10A17 Poles

V.3

sheet a: Poles, Type 7 Aluminum - 35' - 10" Shaft

sheet b: Poles, Type A Aluminum 47'- 6" Shaft

sheet c: Poles, Type E Aluminum 49' – 0" Shaft

sheet d: Poles, Type F Aluminum 49' – 0" Shaft

v.5 10A18 Luminaire Arms

sheet a: Luminaire Arms, Single Member 6-inch Clamp

sheet b: Luminaire Arms, Truss Type 6-inch Clamp

## 11. GEOMETRIC DESIGN

#### 11A. MEDIANS

- v.6 <u>11A1</u> Maintenance Crossover for Freeways
- v.5 11B1 Concrete Corrugated Median
- v.2 11B2 Concrete Median Nose

### 12. STRUCTURES

#### 12A. GENERAL

- v.10 12A3 Name Plate (Structures)
- v.3 <u>12A4</u> Structure Identification Plaques, Ramp Gates, Sign Bridges, Overhead Sign Supports and Traffic Signals

## 13. PAVEMENT DESIGN

#### 13A. GENERAL

13A3 Concrete Pavement Shoulders v.6 13A5 Shoulder Rumble Strip, Milling v.5 <u>a</u> <u>b</u> 13A7 Continuously Reinforced Concrete Pavement Repair and Replacement v.213A8 Asphaltic Rumble Strips at Intersection v.1 13A9 Concrete Rumble Strips at Intersection v.1 13A10 2-Lane Rural Shoulder Rumble Strip, Milling v.2 sheet a: 2-Lane Rural Shoulder Rumble Strip, Milling - Type 1 sheet b: 2-Lane Rural Shoulder Rumble Strip, Milling - Type 2 sheet c: 2-Lane Rural Shoulder Rumble Strip, Milling - Crossings, Intersections, Bridges, **Driveways** sheet d: 2-Lane Rural Shoulder Rumble Strip, Milling – Railroads, Passing, Climbing and Bypass Lanes 13A11 2-Lane Rural Center Line Rumble Strip, Milling v.3

#### 13B. APPROACH DETAILS

<u>a</u> <u>b</u>

- v.10 13B1 Pavement Details for Railroad Approach
- v.9 13B2 Concrete Pavement Approach Slab

sheet a: Concrete Pavement Approach Slab

sheet b: Structural Approach Slab and Concrete Pavement Approach Slab

#### 13C. JOINTS

- v.19 13C1 Concrete Pavement Longitudinal Joints and Ties
- v.17 13C4 Urban Non-Doweled Concrete Pavement
- v.2 13C8 Concrete Pavement Partial Depth Repair
- v.16 13C9 Concrete Pavement Repair and Replacement
  - <u>a</u> <u>b</u> <u>c</u>
- v.3 13C10 Retrofit Dowel Bars
- v.13 13C11 Rural Doweled Concrete Pavement
  - a b
- v.10 13C13 Urban Doweled Concrete Pavement
- v.7 13C14 Base Patching Concrete
  - <u>a</u> <u>b</u> <u>c</u>
- v.7 13C15 Concrete Base
  - <u>a</u> <u>r</u>
- v.2 <u>13C16</u> Detail for Right Turn Lane/ Tee Intersection Bypass Lane on a Concrete Roadway
  - <u>a</u> <u>b</u>
- v.1 13C17 Concrete Joint Detail for Ramp Termini
  - sheet a: Concrete Joint Detail for Exit Ramp Termini
  - sheet b: Concrete Joint Detail for Entrance Ramp Termini

```
13C18 Concrete Pavement Jointing
V.7
                 sheet a: Concrete Pavement Jointing
                 sheet b: Concrete Placement Steel Reinforcement
                 sheet c: Concrete Pavement Joint Types
                 sheet d: Concrete Pavement Jointing at Utility Fixtures
                 sheet e: Concrete Pavement Jointing and Steel Reinforcement in Roundabouts
                          Concrete Pavement Intersection Boxout for Integral Curb and Gutter
                 sheet g: Concrete Pavement Jointing Acceleration/Deceleration Lane
     13C19 HMA Longitudinal Joints
v.3
                                          14. INCIDENTAL DESIGN
     14A. PRESERVATION DETAILS
             Tree Preservation Details
v.3
     14A1
     14A2
             Tree Planting Detail
v.1
     14B. VEHICLE BARRIER SYSTEMS
     14B7
             Concrete Barrier Temporary Precast
v.16
                 <u>a b c d e f g h i j k l m n</u>
     14B8
             Crash Cushion/Sand Barrel Array and Other Temporary Barrier Layout Details
v.2
                 sheet a: End Treatments and General Note
                 sheet b: End Treatments and Transitions from Unanchored barrier to Anchored Barrier
                 sheet c: Overlapping of Temporary Barrier and Temporary Barrier Downstream of Hazard
                 sheet d: Connecting Temporary Barrier to Permanent Barrier and Overlapping Downstream
                           Temporary Barrier with Permanent Barrier
                 sheet e: Median Installation
     14B11 Concrete Barrier (Double Faced)
v.3
     14B15 Steel Plate Beam Guard, Class "A", Installation and Elements
v.11
                 <u>a b c</u>
     14B16 Anchorage for Steel Plate Beam Guard Type 2
V.4
     14B18 Steel Plate Beam Guard, Class "A"
                 sheet a: Steel Plate Beam Guard, Class "A" (at Bridges, Obstacles and Sideroads/Driveways)
                 sheet b:
                          Steel Plate Beam Guard, Class "A" at Median Approach to Bridges at Median Piers and
                           Sign Supports
     14B20 Steel Thrie Beam Structure Approach
                 sheet a: Steel Thrie Beam Structure Approach
                 sheet b: Steel Thrie Beam Structure Approach, Connection to Square End Parapets
                 sheet c: Steel Thrie Beam Structure Approach, Connection to Vertical Faced Parapets
                 sheet d: Steel Thrie Beam Structure Approach, Connection to Sloped End Parapets
                 sheet e: Steel Thrie Beam Structure Approach, Connection to Bridge Railing Types "F" and "W"
                          Steel Thrie Beam Structure Approach, Connection to Bridge Railing Type "M"
                 sheet g: Steel Thrie Beam Structure Approach, Connector Plate Detail
                 sheet h: Steel Thrie Beam Structure Approach, Single Slope Attachment
     14B22 Concrete Barrier, Single Faced (with Anchorage)
                 <u>a</u> <u>b</u>
```

```
v.9
     14B24 Steel Plate Beam Guard Energy Absorbing Terminal
                  <u>a b c</u>
      14B25 Steel Plate Beam Guard, Class "A", Over Low Fill Culverts
v.1
     14B26 Steel Thrie Beam Bullnose Terminal
v.4
                  <u>a b c d e f g h</u>
     14B27 Steel Plate Beam Guard Short Radius Terminal
v.1
                  <u>a</u> <u>b</u> <u>c</u>
      14B28 Guardrail Mow Strip
V.4
                  <u>a</u> <u>b</u>
      14B29 Safety Edge
v.1
     14B32 Concrete Barrier Single Slope (CBSS)
v.10
                  sheet a: Concrete Barrier Single Slope-Standard, Barrier on Bridge, Delineation
                  sheet b: Concrete Barrier Single Slope-Steel Reinforcement
                  sheet c: Concrete Barrier Single Slope Fixed Object Protection
                  sheet d: Concrete Barrier Single Slope-Drainage and Joint Detail
                  sheet e: Concrete Barrier Single Slope-Cold Joint and Height Transition
                            Concrete Barrier Single Slope-End Anchor and Median Barrier, Reinforcement
                  sheet f:
                  sheet g: Concrete Barrier Single Slope and Retaining Wall
                  sheet h: Concrete Barrier Single Slope-Retrofit and Repair
      14B33 Concrete Barrier Single Slope Thrie Beam Anchorage
v.2
                  sheet a: Concrete Barrier Single Slope 32-inch Thrie Beam Anchorage - Barrier Layout
                  sheet b: Concrete Barrier Single Slope 32-inch Thrie Beam Anchorage - Steel Layout #1
                  sheet c: Concrete Barrier Single Slope 32-inch Thrie Beam Anchorage - Steel Layout #2
                  sheet d: Concrete Barrier Single Slope 36-inch Thrie Beam Anchorage - Barrier Layout
                  sheet e: Concrete Barrier Single Slope 36-inch Thrie Beam Anchorage - Steel Layout #1
                            Concrete Barrier Single Slope 36-inch Thrie Beam Anchorage - Steel Layout #2
                  sheet g: Concrete Barrier Single Slope 42-inch Thrie Beam Anchorage - Barrier Layout
                  sheet h: Concrete Barrier Single Slope 42-inch Thrie Beam Anchorage - Steel Layout #1
     14B34 Concrete Barrier Single Slope for Runs under 40-Feet Long
v.2
                  sheet a: 32-inch, 36-inch and 42-inch Concrete Barrier Single Slope Class B
                  sheet b: 56-Inch Concrete Barrier Single Slope Class B
                  sheet c: Concrete Barrier Single Slope Type B
      14B35 Single-Faced NJ Shape Concrete Barrier to Single Slope Concrete Barrier Transitions
v.2
                  sheet a: 32-Inch Single-Faced NJ Shape to 32-Inch Single Slope Concrete Barrier Transition -
                            Transition Layout
                  sheet b:
                            32-Inch Single-Faced NJ Shape to 32-Inch Single Slope Concrete Barrier Transition -
                            Steel Layout
                            32-Inch Single-Faced NJ Shape to 36-Inch Single Slope Concrete Barrier Transition -
                  sheet c:
                            Transition Layout
                  sheet d:
                            32-Inch Single-Faced NJ Shape to 36-Inch Single Slope Concrete Barrier Transition -
                            Steel Layout
                            42-Inch Single-Faced NJ Shape to 42-Inch Single Slope Concrete Barrier Transition -
                  sheet e:
                            Transition Layout
                  sheet f:
                            42-Inch Single-Faced NJ Shape to 42-Inch Single Slope Concrete Barrier Transition -
                            Steel Layout
```

```
v.2
     14B36 F Shape Concrete Barrier to Single Slope Concrete Barrier Transitions
                            32-Inch Single-Faced F Shape to 32-Inch Single Slope Concrete Barrier Transition -
                            Transition Layout
                  sheet b:
                            32-Inch Single-Faced F Shape to 32-Inch Single Slope Concrete Barrier Transition -
                            Steel Layout
                            32-nch Single-Faced F Shape to 36-Inch Single Slope Concrete Barrier Transition -
                  sheet c:
                            Transition Layout
                  sheet d:
                            32-Inch Single-Faced F Shape to 36-Inch Single Slope Concrete Barrier Transition -
                            Steel Layout
                            42-Inch Single-Faced F Shape to 42-Inch Single Slope Concrete Barrier Transition -
                  sheet e:
                            Transition Layout
                  sheet f:
                            42-Inch Single-Faced F Shape to 42-Inch Single Slope Concrete Barrier Transition -
                            Steel Layout
                            51-Inch Single-Faced F Shape to 42-Inch Single Slope Concrete Barrier Transition -
                  sheet g:
                            Transition Layout
                            51-Inch Single-Faced F Shape to 42-Inch Single Slope Concrete Barrier Transition -
                  sheet h:
                            Steel Layout
                            51-Inch Single-Faced F Shape to 56-Inch Single Slope Concrete Barrier Transition -
                  sheet i:
                            Transition Layout
                            51-Inch Single-Faced F Shape to 56-Inch Single Slope Concrete Barrier Transition -
                  sheet j:
                            Steel Layout
      14B37 Double-Faced NJ Shape Concrete Barrier to Single Slope Concrete Barrier Transitions
v 2
                            32-Inch Double-Faced NJ Shape to 36-Inch Single Slope Concrete Barrier Transition -
                            Transition Layout
                            32-Inch Double-Faced NJ Shape to 36-Inch Single Slope Concrete Barrier Transition -
                  sheet b:
                            Steel Layout
     14B38 Double-Faced F Shape Concrete Barrier to Single Slope Concrete Barrier Transitions
v.2
                  sheet a: 32-Inch Double-Faced F Shape to 32-Inch Single Slope Transition - Transition Layout
                  sheet b: 32-Inch Double-Faced F Shape to 32-Inch Single Slope Transition - Steel Layout
                            32-Inch Double-Faced F Shape to 36-Inch Single Slope Transition - Transition Layout
                  sheet d: 32-Inch Double-Faced F Shape to 36-Inch Single Slope Transition - Steel Layout
             Height Transitions for Single Slope Concrete Barrier
v.2
                  sheet a: 32-inch to 36-inch Single Slope Concrete Barrier Height Transition
                            36-inch to 42-inch Single Slope Concrete Barrier Height Transition
                           42-inch to 56-inch Single Slope Concrete Barrier Height Transition
                  sheet c:
     14B40 Vertical Faced Concrete Barrier to Single Slope Concrete Barrier Transitions
v.2
                  sheet a: 32-Inch Vertical to 32-Inch Single Slope Transition - Transition Layout
                  sheet b: 32-Inch Vertical to 32-Inch Single Slope Transition - Steel Layout
                            32-Inch Vertical to 36-Inch Single Slope Transition - Transition Layout
                  sheet c:
                  sheet d:
                           32-Inch Vertical to 36-Inch Single Slope Transition - Steel Layout
                  sheet e:
                            42-Inch Vertical to 42-Inch Single Slope Transition - Transition Layout
                            42-Inch Vertical to 42-Inch Single Slope Transition - Steel Layout
                  sheet f:
                  sheet g: 51-Inch Vertical to 42-Inch Single Slope Transition - Transition Layout
                           51-Inch Vertical to 42-Inch Single Slope Transition - Steel Layout
                  sheet h:
                            56-Inch Vertical to 56-Inch Single Slope Transition - Transition Layout
                  sheet i:
                            56-Inch Vertical to 56-Inch Single Slope Transition - Steel Layout
                  sheet j:
```

```
v.3
     14B41 Single Slope Roadside Retaining Wall
                  sheet a: Single Slope Roadside Retaining Wall - Cross Section and Steel Details
                  sheet b: Single Slope Roadside Retaining Wall - Placement and Drainage
     14B42 Midwest Guardrail System (MGS) Guardrail
                 sheet a: Midwest Guardrail System (MGS) - Installation Cross Sections, Post and Block Details
                 sheet b: MGS - Bolt, Post Spacing, Reflector Detail
                          MGS - Block-out Depth, Bolt Detail, Beam Lapping, Alternative Wood Block-out and
                 sheet c:
                           Adjusting post spacing for Obstructions
                 sheet d: MGS - Missing Post Details
     14B43 Midwest Guardrail System Long Span (MGS L)
v.4
                 sheet a: Midwest Guardrail System Long Span (MGS L) Two-way Road Layout
                 sheet b: Midwest Guardrail System Long Span (MGS L) One-way Road Layout
                 sheet c: Midwest Guardrail System Long Span (MGS L) Cross Section and CRT Post Details
     14B44 Midwest Guardrail System (MGS) Terminal
                  sheet a: Midwest Guardrail System (MGS) Energy Absorbing Terminal (EAT) - Layout
                 sheet b: MGS EAT - Ground Strut, Anchor Cable Box, Bearing Plate
                  sheet c: MGS EAT - Post Details, Block Detail, Marker Post Detail, Reflective Sheeting Detail
     14B45 Midwest Guardrail System (MGS) Thrie Beam Transition
v.5
                 sheet a: Midwest Guardrail System (MGS) Thrie Beam Transition - Layout
                  sheet b: MGS Thrie Beam Transition - Post Details, Thrie Beam Terminal Connector Details,
                           Splice Detail, Cross Section
                 sheet c: MGS Thrie Beam Transition - Thrie Beam Details, Post Details, Block Details
                  sheet d: MGS Thrie Beam Transition - W and Thrie Beam Connection to Bridge Parapet with
                           Square Ends
                 sheet e: MGS Thrie Beam Transition - W and Thrie Beam Connection to Vertical Faced Parapets
                           MGS Thrie Beam Transition - W and Thrie Beam Connection to Bridge Parapets with
                  sheet f:
                           Sloped Ends
                  sheet g: MGS Thrie Beam Transition - Connection to W and F Bridge Parapet
                  sheet h: MGS Thrie Beam Transition - Connection to M Bridge Parapet
                 sheet i: MGS Thrie Beam Transition - Single Slope Connection Plate Details
                 sheet j: MGS Thrie Beam Transition - Connection to Single Slope Barrier
                 sheet k: MGS Thrie Beam Transition - Approach Connection to NY Bridge Parapets
                          MGS Thrie Beam Transition - Downstream Connection to NY Bridge Parapets
     14B47 Midwest Guardrail System (MGS) Type 2 Terminal
v.3
                  sheet a: Midwest Guardrail System (MGS) Type 2 Terminal - Terminal Layout
                  sheet b: MGS Type 2 Terminal - Details
                 sheet c: MGS Type 2 Terminal – Post Components and Assemblies
                 sheet d: MGS Type 2 Terminal - Ground Strut, Guardrail, Cable Assembly Components
                  sheet e: MGS Type 2 Terminal – Arm Components and Assembly, Cable Bracket Components
                           and Assembly
                 sheet f: MGS Type 2 Terminal - Part List
                 sheet g: MGS Type 2 Terminal - Part List
     14B48 Retrofit Cantilever Blunt End
                 sheet a: Retrofit Cantilever Blunt End - Elevation, Section details, Installation and Bill of Materials
                  sheet b: Retrofit Cantilever Blunt End - Components
```

```
14B49 Retrofit Cantilever Sloped End
v.1
                  sheet a: Retrofit Cantilever Sloped End - Elevation, Section Detail Installation and Bill of Materials
                  sheet b: Retrofit Cantilever Sloped End - Anchor Plate Assembly Parts and Component Details
     14B50 Thrie Beam Approach Retrofit Installation of Missing Post
                  sheet a:
                          Thrie Beam Approach Retrofit Installation of Missing Post - Missing Post Cross-Beam
                  sheet b:
                           Thrie Beam Approach Retrofit Installation of Missing Post - Missing Post Cross-Beam
                           Components
                 sheet c:
                          Thrie Beam Approach Retrofit Installation of Missing Post -Post Details, Bill of Materials
v.2
     14B51 Anchor Post Assembly Top Mounted
                  sheet a: Anchor Post Assembly Top-Mounted - Layout and Mounting Details
                  sheet b: Anchor Post Assembly Top-Mounted - Assembly Details
                  sheet c: Anchor Post Assembly Top-Mounted - Fill, Joint Placement and Bill of Materials
     14B52 Cable Barrier Type 1
V.3
                 sheet a: Cable Barrier Type 1 - Layout, Material List
                 sheet b: Cable Barrier Type 1 - Rock Excavation, Cross Section, Line Post Details
                 sheet c: Cable Barrier Type 1- Layout, Bill of Materials
     14B53 Short Radius MGS
V.2
                 sheet a: Short Radius Beam Guard and Terminal (MGS) - Layout
                  sheet b: Short Radius Beam Guard and Terminal (MGS) - Short Radius Terminal Views, Detail A
                 sheet c: Short Radius Beam Guard and Terminal (MGS) - Terminal Detail B, Detail C and Detail D
                  sheet d: Short Radius Beam Guard and Terminal (MGS) - Terminal Anchor Bracket and Anchor
                           Bracket Bearing Details
                 sheet e: Short Radius Beam Guard and Terminal (MGS) - End Section Buffer, Terminal
                           Connector, Reflector Sheeting Parts
                           Short Radius Beam Guard and Terminal (MGS) - Washer, Post, Tube, Plate and
                  sheet f:
                           Terminal Post Details, Cable Assembly Detail
                 sheet g: Short Radius Beam Guard and Terminal (MGS) - Part List
                  sheet h: Short Radius Beam Guard and Terminal (MGS) - Part List
                  sheet i:
                           Short Radius Beam Guard and Terminal (MGS) - Part List
     14C. RECREATIONAL FACILITIES
     14C1
             Timber Rail Guard Fence, Curb and Guard Post and Marker Post
v.3
     14C2
             Historical Marker Construction
v.3
     14C3
             Roadside Picnic Table
V.4
     14C6
             Wayside Well Shelter and Pump and Well Platform
v.6
                 <u>a</u> <u>b</u>
     14C7
             Picnic Tables, Single Pedestal
                 <u>a</u> <u>b</u>
                    15. R/W, ACCESS CONTROL AND TRAFFIC CONTROL
     15A. MARKER POSTS
             Marker Post for Right-of-Way
v.13
     15A1
                 sheet a: Marker Post for Right-of-Way
                  sheet b: Flexible Marker Post for Right-of-Way
```

15A3

Flexible Marker Post for Culvert End

<u>a</u> <u>b</u>

```
15A4
             Delineator and Delineator Post
V.7
                  sheet a: Flexible Delineator Post
                  sheet b: Barrier Wall Delineator with Reflective Sheeting
                  sheet c: Delineator Post with Reflective Sheeting
                 sheet d: Channelizing Devices, Permanent Flexible Tubular Marker Post
                 sheet e: Delineator with Reflective Sheeting
             Object Marker for Hazardous Culverts
     15A7
v.2
     15B. FENCING
             Fence Woven Wire
v.8
     15B1
                 a b
     15B3
             Chain Link Fence
v.15
                 a b
     15B10 Wood Gate, Double Leaf
V.1
                 <u>a b c</u>
     15B11 Wood Gate, Single Leaf
v. 1
     15B12 Pipe Gate Details
v.1
                 <u>a</u> <u>b</u>
     15C. MARKING AND SIGNING
     15C2
             Barricades and Signs for Mainline, Detour, On Ramp, Off Ramp Closures and Advanced Width
v.8
             Restriction
                 sheet a: Barricades and Signs for Mainline Closures
                  sheet b: Barricades and Signs for Various Closures
                  sheet c: Detour Signing for Mainline Closures
                  sheet d: On-Ramp Lane Closure
                 sheet e: Traffic Control, Guidance Signing for Off-Ramp Lane Closure
                 sheet f: Advanced Width Restriction Signing
             Barricades and Signs for Sideroad Closures
     15C3
v.5
     15C4
             Traffic Control, Advance Warning Signs 45 M.P.H. or Greater, Two Way Undivided Road Open to Traffic
v.5
     15C5
             Traffic Control, Advance Warning Signs 40 M.P.H. or Less, Two Way Undivided Road Open to Traffic
v.5
     15C6
             Signing and Marking for Two Lane Bridges
v.10
     15C7
             Pavement Marking Words, Symbols and Arrows
                  sheet a: Pavement Marking Symbols
                  sheet b: Pavement Marking Words
                 sheet c: Pavement Marking Arrows
                 sheet d: Roundabout Marking Arrows
                 sheet e: Pavement Marking for Bike Lanes
v.22
     15C8
             Pavement Marking, Mainline and Turn Lanes
                 sheet a: Longitudinal Marking (Mainline)
                  sheet b: Pavement Marking (Turn Lanes)
                  sheet c: Pavement Marking (Turn Lanes)
                 sheet d: Pavement Marking (Turn Lanes)
     15C9
             Signing and Pavement Marking Railroad Grade Crossing, RR Truck Stopping Lane
                 sheet a: Signing and Pavement Marking Details for Railroad - Highway Grade Crossings
```

sheet b: Railroad Truck Stopping Lane Pavement Markings

```
15C11 Channelizing Devices
v.9
                 sheet a: Channelizing Devices - Flexible Tubular Marker Post
                 sheet b: Channelizing Devices - Drums, Cones, Barricades and Vertical Panel
     15C12 Traffic Control for Lane Closure with Flagging Operation
v.9
                 a b
     15C14 Aerial Enforcement Bars Pavement Marking Details
V.4
     15C18 Median Island Marking
v.6
                 sheet a: Pavement Markings, Median Islands
                 sheet b: Pavement Markings, Median Island Nose
                 sheet c: Median Pavement Markings, Double Arrow Warning Sign Placement
     15C19 Moving Pavement Marking Operations
V.7
                 sheet a: Moving Pavement Marking Operation - Two-Lane Two-Way Roadway
                 sheet b: Moving Pavement Marking Operation – Multi-lane Undivided Roadway
                 sheet c: Moving Pavement Marking Operation - Multi-Lane Divided Roadway
     15C20 Yield Markings
v.2
     15C21 Signing and Marking for Two Lane to Four Lane Divided Transitions
v.10
     15C26 End-of-Roadway Signing
v.4
     15C29 Bicycle Lane Pavement Marking
v.7
                 sheet a: Bicycle Lane Marking
                 sheet b: Bicycle Lane - Pavement Marking for Shared Lane 35 MPH or Less
     15C31 Pavement Marking (Ramps and Gores)
v.4
                 sheet a: Pavement Marking Exit Ramp and Parallel Exit Ramp
                 sheet b: Pavement Marking Major Split Freeway to Freeway
                 sheet c: Pavement Marking Entrance Ramp and Parallel Entrance Ramp
                 sheet d: Pavement Marking, Lane Drop and Lane Reduction
     15C33 Stop Line and Crosswalk Pavement Marking
v.4
     15C34 Standard Application for Temporary Raised Pavement Markers, Type II
V.3
     15C35 Pavement Marking
v.5
                 sheet a: Pavement Marking (Intersections)
                 sheet b: Pavement Marking (Climbing and Passing Lanes)
                 sheet c: Pavement Marking (Climbing and Passing Lanes)
     15C36 Parking Stall Marking
v.1
     15D. TRAFFIC CONTROL
     15D4
            Traffic Control, Ramp Construction Staging
v.1
            Traffic Control, Single Lane Crossover Entrance with Barrier
     15D5
v.5
     15D6
            Traffic Control, Two-Lane Two-Way Operation
v.5
     15D7 Traffic Control, Temporary Exit Ramp Crossover
v.5
     <u>15D8</u> Traffic Control, Temporary Entrance Ramp Crossover
v.8
            Traffic Control, Single Lane Crossover Exit
     15D9
v.6
     15D10 Traffic Control, Single Lane Crossover Exit with Barrier
v.5
     15D11 Traffic Control, Single Lane Crossover
v.8
     15D12 Traffic Control
v.10
                 sheet a: Traffic Control, Lane Closure
```

```
sheet b: Traffic Control, Lane Closure, Speed Reduction
                  sheet c: Traffic Control, Lane Closure, Dynamic Late Merge System
                  sheet d: Traffic Control, Lane Closure, Basic Traffic Queue Warning System
                  sheet e: Traffic Control, Lane Closure, Traffic Queue Warning System
     15D13 Temporary Emergency Pullouts
v.2
     15D14 Traffic Control, Two Lane Closure on Freeway or Expressway, Short -Term (Less than 24 Hours)
v.4
     15D15 Traffic Control, Ramp within Lane Closure
v.6
                  sheet a: Traffic Control, Parallel Entrance Ramp within Right Lane Closure
                  sheet b: Traffic Control, Entrance Ramp within Left Lane Closure
                  sheet c: Traffic Control, Tapered Entrance Ramp within Right Lane Closure
                  sheet d: Traffic Control, Tapered Entrance Ramp within Left Lane Closure
                  sheet e: Traffic Control, Parallel Exit Ramp within Lane Closure
     15D16 Traffic Control, Exit Ramp Closure
v.5
     15D20 Traffic Control, Single Lane Closure, Non-Freeway/Expressway
v.6
                  sheet a: Traffic Control, Single Lane Closure, Divided Non-Freeway/Expressway
                  sheet b: Traffic Control, Single Right Lane Closure Undivided Non-Freeway/Expressway
                  sheet c: Traffic Control, Single Left Lane Closure Undivided Non-Freeway/Expressway
     15D21 Traffic Control, Intersection within Single Lane Closure
v.7
                  sheet a: Traffic Control, Intersection within Single Right Lane Closure
                  sheet b: Traffic Control, Intersection within Single Left Lane Closure
     15D22 Traffic Control, Two Lane Closure, Non-Freeway/Expressway
v.5
     15D23 Traffic Control, Intersection within Two Lane Closure
V.7
                  sheet a: Traffic Control, Intersection within Two Right Lane Closure
                  sheet b: Traffic Control, Intersection within Two Left Lane Closure
     15D27 Traffic Control, Shoulder Closure on Divided Roadway, Speeds Greater than 40 M.P.H.
v.3
     15D28 Traffic Control, Work on Shoulder or Parking Lane, Undivided Roadway
v.4
     15D29 Traffic Control, Vehicle Entrance/Exit or Haul Road
v.6
     15D30 Traffic Control, Pedestrian Accommodation
v.7
                  sheet a: Traffic Control, Pedestrian Accommodation
                  sheet b: Traffic Control, Temporary ADA Compliant Pedestrian Accommodation
                  sheet c: Traffic Control, Temporary Pedestrian Accommodation
                  sheet d: Traffic Control, Pedestrian Accommodation
                  sheet e: Traffic Control, Pedestrian Accommodation
                  sheet f: Traffic Control, Pedestrian Accommodation
                  sheet g: Traffic Control, Pedestrian Accommodation
                  sheet h: Traffic Control, Pedestrian Accommodation
                  sheet i: Traffic Control, Pedestrian Accommodation
                  sheet j: Traffic Control, Pedestrian Accommodation
     15D31 Traffic Control, Temporary Bypass Roadway
V.4
     15D32 Traffic Control, One Lane Road Stop Condition
v.6
     15D33 Traffic Control, One Lane Road with Temporary Signals
v.7
     15D35 Ramp Gate
v.3
                  <u>a</u> <u>b</u> <u>c</u>
     15D36 Barricade Rack
v.1
     15D37 Traffic Control, Flagging Operation, Roundabout
v.3
```

#### Standard Detail Drawings - Table of Contents

15D39 Traffic Control for Drop-off Signing v.2 15D40 Traffic Control, Lane Shift, Multi-Lane Divided or One-Way Road v.4 sheet a: Traffic Control, Full Lane Shift, Non-Freeway/Expressway or Multilane Divided 45MPH or Under sheet b: Traffic Control, Full Lane Shift Multilane Divided 50MPH and Greater Traffic Control, Partial Lane Shift, Non-Freeway/Expressway or Multilane Divided 45MPH or Under sheet d: Traffic Control, Partial Lane Shift Multilane Divided 50MPH and Greater 15D41 Traffic Control, Lane Shift, Multi-lane Divided v.2 15D42 Traffic Control, Two Lane Full Freeway Closure v.1 15D43 Traffic Control, Short Duration Mobile Operations v.2 15D44 Traffic Control, Signing on Roadways with Milled Surfaces v.2 15D45 Traffic Control, Signing on Roadways with Loose Gravel v.3 15D46 Traffic Control, One-Way Signing v.1. 15D47 Traffic Control, Ingress/Egress v.2. sheet a: Ingress/Egress with Barrier sheet b: Ingress/Egress without Barrier 15D48 Traffic Control, Lane Shift in Flagging Operation v.1 15D49 Traffic Control, System Ramp Closure v.1 15D50 Traffic Control, Added Lane Closure v.2. sheet a: Added Lane Closure without Lane Shift sheet b: Added Lane Closure with Lane Shift 15D51 Traffic Control, Mobile Operations on an Undivided Roadway v.1

## 16. SURVEYING

#### 16A. MONUMENTS

v.7 16A1 Landmark Reference Monuments and Covers